

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference R. 305860 Saile/O	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/DE2004/001023	International filing date (day/month/year) 15.05.2004	Priority date (day/month/year) 22.07.2003
International Patent Classification (IPC) or national classification and IPC H02K15/12, B05D1/06		
Applicant ROBERT BOSCH GMBH		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 16 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Name and mailing address of the IPEA/EP	Authorized officer																								
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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
 - ☐ publication of the international application (Rule 12.4)
 - ☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:

pages 1-6 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

- ☒ the claims:
- nos. 1-11 as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

- ☒ the drawings:
- sheets 1/3-3/3, - Figures 1-6 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1-11</u>	YES
	Claims	<u></u>	NO
Inventive step (IS)	Claims	<u></u>	YES
	Claims	<u>1-11</u>	NO
Industrial applicability (IA)	Claims	<u>1-2, 4-11</u>	YES
	Claims	<u>3</u>	NO
2. Citations and explanations (Rule 70.7)			
1 This report makes reference to the following documents:			
D1: US 6322629			
D2: EP 0891817			
D3: DE 19755652			
D4: US 5618589			
D5: US 5922413			
D6: GB 1046086			
2.1 Claim 1: inventive step			
The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step within the meaning of PCT Article 33(3).			
D1, which is considered to represent the prior art closest to the subject matter of claim 1, discloses (the references in parentheses are to this document):			

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process for applying an electrical insulation (see figure 2 and column 5, lines 17-18: electrical insulating film or layer 12; figure 3, step 2) to a ferromagnetic body of a main element of an electrical machine ("stator core 2", see figure 2), said body being provided with axial slots (slots 16, figure 1) for receiving an electrical winding, in which the body is coated with electrostatically charged plastics powder (cf. figure 3, step 2 and column 5, lines 5-7) and in which, further, the body, between which and the plastics powder a potential difference is present, is coated by direct powder spray coating (cf. column 5, lines 7-12) (implicitly disclosed by the expression "electrostatic powder coating process" (column 5, lines 6-7)).

The subject matter of claim 1 thus differs from the known process in indicating a layer thickness in the range 1.0-2 mm: that is, a thick coating is produced.

The problem addressed by the present invention may therefore be considered that of modifying the process indicated in D1 so as to enable the electrical insulation to be applied in only one working step and at the same time to improve the electric strength of the coating.

A solution to the above-indicated problem is indicated in D2 (see the description, column 1, lines 6-20), the subject matter of which consists

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in a similar process for electrostatic coating.

A person skilled in the art would use the process known from D2 to produce an insulation for the "stator core 2" described in D1, since D2 also discloses a process for the electrostatic coating of workpieces with powdery materials (D2, column 1, lines 3-5) in order to produce electrically insulating layers (D2, column 1, lines 13-15).

Although D2 does not specify that the spray-coated layer thickness must be 1.0-2 mm, such a layer thickness is readily achieved by the process disclosed in D2 (see D2, column 2, lines 3-7).

Therefore, proceeding from D1, a person skilled in the art could combine the teaching thereof with that of D2 and by routine testing (for example, ageing, long-term and power-frequency voltage tests) determine the optimum thickness in relation to electric strength of a spray-coated insulating layer for a particular application.

Selection of a layer thickness in the range 1-2 mm cannot, therefore, be considered to involve an inventive step.

2.2.1 Preliminary comment on claim 10:

The PCT International Search and Preliminary Examination Guidelines, paragraph 5.19, specifies that a claim referring to a claim of a different

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category is NOT dependent on the said claim of a different category within the meaning of PCT Rule 6.4.

This guideline should be applied to claim 10, since claim 10 is a device claim, whereas claims 6-9 are process claims.

Claim 10 is therefore an independent claim which does NOT contain the features of claims 6-9 (cf. also the first example given in the PCT International Search and Preliminary Examination Guidelines, paragraph 5.19).

2.2.2 Claim 10: inventive step

The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 10 does not involve an inventive step within the meaning of PCT Article 33(3).

D5, which is considered to represent the prior art closest to the subject matter of claim 10, discloses (the references in parentheses are to this document) a:

device containing a spray device (electrostatic powder gun 19 in figure 8) with at least one spray site (figure 8: tip of electrostatic powder gun 19, at which charged powder coat particles 20 exit) and further containing a metering device

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connected upstream of the spray device (figure 8: "compressed air" in combination with the description, column 7, lines 56-62: "thickness of coat film is adjusted by [...] spray air pressure"), a powder hopper (figure 8, vessel 16) and a pneumatic powder conveyor device which sucks powder from the powder hopper and feeds it to the metering device (see column 7, lines 30-35).

The subject matter of claim 10 thus differs from the known device in that it contains the features: "spray chamber through which a conveyor belt receiving the body passes".

Although D5, figure 8, does not expressly mention these features, they are well known to a person skilled in the art (see D6, figure 1: spray chamber 3 through which conveyor belt 1 passes). Therefore, they cannot substantiate inventive step, since the features are used in D6 for the same purpose:

- spray chamber for receiving a spray device (10)
- conveyor belt for conveying.

2.3 Dependent claims

Dependent claims 2, 4-9 and 11 do not contain any features which, in combination with the features of any claim to which they refer back, meet the PCT requirements for inventive step (see D1-D6 and

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the corresponding passages indicated in the search report).

- 3 Observation on the objection concerning the industrial applicability of claim 3:

Claim 3 specifies that a "coarse plastics powder" with a mean diameter $>150\text{ }\mu\text{m}$ should be used. Further, the description of the embodiment (page 5, paragraph 3 onwards) indicates that a "spray or corona-charge gun" (page 5, lines 32-33) is arranged in the spray device 32 which is "commercially available as a standard component" (page 5, line 34).

However, D3 (see column 1, lines 29-31) states that only powder with a diameter of approximately $60\text{ }\mu\text{m}$ can be applied using a spray gun. This statement is inconsistent with the above-indicated statement by the applicant.

Therefore, the present disclosure appears to be insufficient within the meaning of PCT Article 5, since the technical teaching provided is apparently inadequate to permit a person skilled in the art to carry out the process as per claim 3 of the application.

Reference is also made in this connection to the PCT International Search and Preliminary Examination Guidelines, paragraph 4.12, according to which any deficiencies in the original

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disclosure cannot be cured subsequently by adding [further examples or features] without offending against PCT Article 34(2)(b).

If the applicant had demonstrated that, at the priority date of the present application, spray guns suitable for spraying coarse plastics powders with a diameter of $>150\text{ }\mu\text{m}$ were commercially available as a standard component, the objection concerning the absence of industrial applicability would not have been sustainable.

4 Reply by the applicant dated 14 October 2004
(subsequently referred to as "the reply"):

4.1 The applicant's arguments in the reply concerning the presence of inventive step in the subject matter of claim 1 did not convince the examiner that the arguments advanced in 2.1 of this report were incorrect. The reasons are given below:

The reply (section 1, page 1, penultimate paragraph) states that "the opinion expressed in the conclusion that the [...] selection of the layer thickness guideline is known from D2 is incomprehensible".

We refer to section 2.1 of the present report:
"Although D2 does not specify that the spray-coated layer thickness must be 1.0-2 mm, such a layer thickness is readily achieved by the process disclosed in D2 (see D2, column 2, lines 3-7).

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Therefore, proceeding from D1, a person skilled in the art could combine the teaching thereof with that of D2 and by routine testing (for example, ageing, long-term and power-frequency voltage tests) determine the optimum thickness in relation to electric strength of a spray-coated insulating layer for a particular application.

Selection of the range 1-2 mm cannot, therefore, be considered to involve an inventive step."

Thus, it was argued NOT that the selection of layer thickness was known from D2, but that a person skilled in the art could determine an optimum layer thickness for a particular application by routine testing.

The suggestion by the applicant (page 1, last paragraph to page 2, first paragraph of the reply) that the layer thickness guideline [disclosed in the process described in the embodiment, but not in the process claimed in claim 1] is stipulated "so that the slot walls of the axial slots should receive adequate insulation" is not disputed by this Authority.

However, the following should be stated:

a) The wording of claim 1 is so vague that the claim is anticipated by D1 or D2, as detailed in section 2.1 above. The claim refers only to a

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"process for applying an electrical insulation to a ferromagnetic body of a main element of an electrical machine, said body being provided with axial slots": that is, no indication is given that an insulation layer is applied to the axial slots by this process.

b) The process known from D2, conversely, requires NO preset minimum layer thickness in order to ensure that adequate insulation is achieved in the axial slots of armatures of electric machines, since by simultaneous (cf. D2, column 2, lines 2-7) or alternating (column 2, lines 35-41) coating with positively and negatively charged particles the surface charge on, for example, the axial slot walls is reduced (D2, column 2, lines 3-7), having the effect that the charge carried by powder particles already applied DOES NOT act to repel subsequent powder particles.

However, the use in the process described in D2 of an insulation with the predetermined layer thickness of 1-2 mm does not per se yield unexpected advantages or effects compared with the remainder of the range.

c) The opinion of the applicant that "[in the process according to D2 no powder coating of the walls of the axial slots of the armature body takes place]" (page 3, paragraph 2 of the reply) is not tenable.

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Reasons:

In his reply the applicant at best cites instances, but no evidence, in support of the said opinion.

Further, it should be taken into consideration that, in any case, claim 1, as indicated in 4a) above, does NOT specify that axial slots should be insulated.

Moreover, the shape (for example, drop-shaped, rod-shaped, trapezoid) and size (for example, armature for a toothbrush drive or armature for a turbogenerator) of the axial slots is not defined in claim 1: the range of "ferromagnetic bodies of a main element of an electrical machine, said bodies being provided with axial slots" falling within the present claim 1 is so wide that a sweeping, unsubstantiated opinion is not capable of convincing the examiner.

Rather, it is assumed by this Authority that the process according to D2 very probably permits at least rod-shaped (that is, closable by a slot wedge after the winding has been introduced) slots of a certain minimum slot width to be provided with an insulating layer of between 1 and 1.5 mm in thickness: for example, by alternately spraying the slots using spray guns which spray differently (positively or negatively) charged powder particles.

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The opinion and the reasons therefor given in 2.1 above, according to which claim 1 lacks inventive step, are therefore upheld.

This Authority confirms that the claimed process utilizes different physical effects compared with the process described in D2. However, the said effects are not technical features of the independent claim and cannot be considered in evaluating whether inventive step is present.

- 4.2 With respect to section 2. of the reply, the following opinion is stated:

In section 3 of the present report it was NOT "taken as fact" that the statement in D3 to the effect that spray guns can only spray powder with a mean diameter of 60 μm was valid at the priority date of the present application. The applicant was given the opportunity to substantiate his opinion that spray guns are commercially available as standard components which can spray coarse plastics powder (mean particle diameter $>150 \mu\text{m}$), subsequently referred to only as "coarse plastics powder", precisely because this assumption was not made.

Said opportunity was furnished because the searched prior art - namely, D3 - casts doubt on the correctness of the above-indicated statement in the description of the application.

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This Authority did not immediately take a decision as to whether the statement in D3 applied at the priority date of the present application. The doubts to which D3 gave rise required and still require investigation, since a statement by this Authority with respect to the industrial applicability of claim 3 is expected.

In the view of this examiner, the applicant's statement in the last paragraph of the reply is not sufficient to justify dropping the objection concerning industrial applicability.

Reasons:

The applicant's statement in the description of the application that spray guns which can spray coarse plastics powder are commercially available as standard components implies that:

- spray guns were commercially available (at the priority date) which could, in fact, spray coarse plastics powder. In this case the applicant would have to be able to name at least one or, better, several models of said spray guns and their manufacturer or manufacturers;
- such spray guns are commercially available as standard components. Consequently, it is further to be presupposed that in professional circles at the priority date said spray guns were known

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to be able to spray coarse plastics powder. If this fact was NOT known in professional circles, a person skilled in the art would NOT have been given sufficient incentive by the description of the application to select a spray gun capable of spraying coarse plastics powder. He would then have been unable to carry out the process as per claims 1 and 3. The statement could have been substantiated, for example, by submitting a catalogue of spray guns indicating that coarse plastics powder could be sprayed.

The applicant has satisfied neither of the two conditions in the reply, since he has yet to name a spray gun capable of spraying coarse plastics powder: see the reply, last sentence: "The mean diameter of the powder particles was thus clearly over the limit [of approximately 60 μm , see D3, column 1, lines 29-31] indicated in D3".

Therefore, it has not been substantiated that the process according to claims 1 and 3 can, in fact, be carried out using spray guns from the company named in the reply.

Consequently, the objection to claim 3 with respect to industrial applicability is likewise upheld.

5 Other observations:

5.1 Requirements of PCT Rule 13

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At present the application does not meet the requirements of PCT Rule 13.1.

Reasons:

In the present case the wording of two independent claims, wherein one is a process claim and the other is a device claim, is fundamentally admissible: see the PCT International Search and Preliminary Examination Guidelines, paragraph 5.13. However, PCT Rule 13.1 requires that a group of inventions must be linked by a single general inventive concept.